

Final Report on NAGW-3222

Studies of westward electrojets and field-aligned currents in the magnetotail during substorms: Implications for magnetic field models.

Over the duration of the grant the progress was made toward the scientific objectives detailed in the proposal. Our studies elucidated the relationship between the auroral arcs and magnetotail phenomena. One paper (Taktakishvili et al. 1995) examined particle energization in the source region of the field-aligned currents that intensify at substorm onset when the arc brightens to form the westward electrojet. A second paper (Auroral arcs and near-Earth substorm onset, R. E. Lopez, presented at the Fall AGU meeting, December 1994), examined the relationship between the precipitating particles in the arcs, the location of the westward electrojet, and magnetospheric source regions

Two earlier papers (Lopez, 1994; Cattell et al, 1994) also investigated the roles that field aligned currents and particle acceleration have during substorms. In addition, an education supplement to thos grant produced a published paper (Lopez 1996).

References:

Lopez, R. E., On the role of reconnection during substorms, *Proc. International Conference on Substorms-2*, edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Insitute, University of Alaska, 175-182, 1994.

Cattell, C., C. Roller, and R. Lopez, Multi-spacecraft observations of substorm onsets and precursor events, *Proc. International Conference on Substorms-2*, edited by J. R. Kan, J. D. Craven, and S.-I. Akasofu, Geophysical Insitute, University of Alaska, 247-254, 1994.

Taktakishvili, A., R. E. Lopez, and C. C. Goodrich, Energization of Ions in Near-Earth Current Sheet Disruption, *Geophys. Res. Lett.*, 22, 627-630, 1995.

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